

Effect of Community Resources on Junior Secondary Schools' Performance in Basic Technology in Ilorin, Kwara State, Nigeria

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Abstract

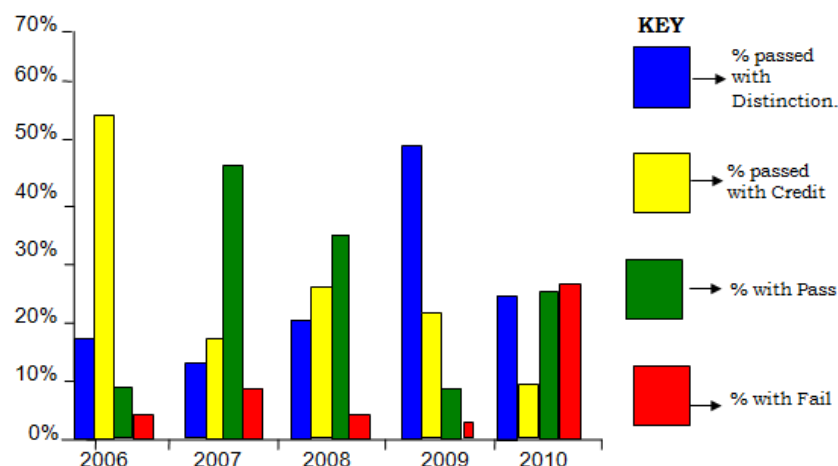
Community resources refer to the various learning situations through which both teachers and students come into first hand contact with the resource persons, places and materials that would benefit the teaching and learning process. It includes visiting organizations, institutions, and neighborhoods or reigns of the community. The main purpose of this study was to find out the effect of community resources on Junior Secondary Schools Students' Performance in Basic Technology, in Ilorin Kwara State Nigeria. Specifically, the study investigated the differences in the performance of students taught using expository method and those taught using community resources. . An intact class of Junior Secondary School two in each of the two schools selected was involved in the study. Purposive sampling technique was used to select the two schools involved in the study. The two sampled Junior Secondary Schools comprised 70 students who were randomly assigned to experimental and control groups respectively. Two research instruments were used to gather the relevant data for this study; Instructional Strategy on Practical Skills (Treatment) ISPS and Basic Technology Achievement Test (BTAT). The findings indicated that the students taught using community resources performed significantly better than their counterparts taught using expository. Finally, it was recommended that, teachers should expose students to community resources which will promote and encourage social interaction, active engagement in learning, self motivation, discovery learning, learning by doing and learning by experience, Basic Technology teachers should be trained on the effective use of community resources. Moreover, community resources are strongly recommended for developing practical skills among Junior Secondary students.

INTRODUCTION

Community resources are to enhance learning and academic success by providing activities and programmes for students using resource persons from the community to share their skills and knowledge. Community resources, according to Ajelabi (2000) are human and non-human resources outside the classrooms for the purpose of making relevant observations and obtaining some specific information. Instructional materials can ensure maximum effectiveness and efficiency in teaching and learning process. Efficiency entails how judicious the instructional materials are utilized to obtain optimum achievement of instructional goals and objectives.

Poor performance of students can be worked on with the use of community resources in the teaching and learning of Basic Technology. Nigeria Educational Research and Development Council (NERDC, 2007), noted that the use of real life experience through an industrial visit (community resources) is the best way to facilitate the teaching and learning of Basic Technology. Fakomogbon, Ibrahim and Gegele (2007) observed that most of the imported equipment for teaching and learning Basic Technology were left uninstalled.

The poor performance of students in Basic Technology at JSCE from 2006-2010 in Kwara State reflected the level of their understanding of the subject.



Source: Kwara State Ministry of Education (2011).

Figure 1: A Bar Chart showing the percentage of Students' Performance in Basic Technology at Junior Secondary Certificate Examination (J.S.C.E) in Kwara State from 2006 – 2010.

A glance at figure 1 on a bar chart showing the percentage of students' performance in Basic Technology, year 2006 and 2009 had the best result with 65% and 59.1% respectively passed with credit and distinction respectively. In the year 2007, 2008 and 2010, the students recorded poor performance in the subject. 20%, 30% and 29% respectively passed with credit, distinction and ordinary pass respectively.

Adegbija (2000) stressed that with the aid of instructional materials, the teachers or trainers are helped with the use of instructional materials to have the indispensable and qualitative educational experiences that will in turn make teaching and learning more meaningful. Therefore, instructional materials can ensure maximum effectiveness and efficiency in teaching and learning process. Efficiency entails the judicious use of instructional materials to obtain optimum achievement of instructional goals and objectives.

THE PROBLEM

The use of community resources will ensure that teachers, parents and community members meet their responsibilities to ensure the effectiveness of teaching and learning. Community resources, according to Ajelabi (2000) are human and material resources found outside the classroom for the benefit of making appropriate observations for effective teaching and learning process. The factors militating against the teaching and learning of Basic Technology are; lack of equipped workshop, insufficient qualified teachers, non-availability of facilities to aid the teaching of the subject, among others (Fakomogbon, 2004).

Reasonable studies have been conducted to investigate the effect of community resources on the students' academic performance. It seems no study has been carried out on the use of metal workshop as a resource centre. An attempt was made in this study to examine the effect of community resources on junior secondary schools' performance in Basic Technology, specifically, in the differences on the performances of the students taught using community resources and those taught using expository method.

PURPOSE OF THE STUDY

The main purpose of this study was to find out the effect of community resources on Junior Secondary Schools' Performance in Basic Technology.

Specifically, the study investigated:

1. The performance of students taught using expository in Basic Technology.
2. The performance of students taught using community resources in Basic Technology.
3. The difference(s) between the performances of students taught using expository and those taught using community resources in Basic Technology.

RESEARCH QUESTIONS

In this study, answers were sought for the following research questions.

1. What is the performance of students taught using expository in Basic Technology?
2. What is the performance of students taught using community resources in Basic Technology?
3. Is there any difference in the performances of students taught using expository and those taught using community resources in Basic Technology?

RESEARCH HYPOTHESIS

This null hypothesis was tested:

H₀: There is no significant difference between the performance of students taught using expository and those taught using community resources in Basic Technology?

SCOPE OF THE STUDY

This study was carried out in two selected Junior Secondary Schools (J.S.S 2) in Ilorin: Government Junior High School (Control Group) & Government Day Junior Secondary School, Adeta (Experimental Group). The students were conveyed to metal workshop. There they were exposed to; the processes in identification of metals, types of metals, various uses of metals, meaning and uses of metal work hand cutting tools, meaning and uses of metal work marking tools and the importance of metal finishing.

REVIEW OF RELATED LITERATURE

The following literatures were reviewed.

National Policy on Education (FRN, 2004) pointed out that pre-vocational skills should be provided by the curriculum of Junior Secondary Schools Basic Technology. Basic Technology involves the following areas of studies: technical drawing, metal work, wood work, electricity, electronics, plastics, ceramics, building, etc. These areas of studies are very important in that their studies deal with how to apply the knowledge, skills and processes involved in the solution of humans problems.

The designing of Basic Technology to be part of the school curriculum calls for a well planned curriculum and suggests some useful and relevant instructional materials to prevent the teacher from total dependent on the theoretical aspect of the subject (NERDC, 2007). Basic Technology should be properly taught using relevant instructional materials. This is in line with the observation of Abolade (2009) who stressed that for regular use of current technological devices which are successful for quantitative and qualitative learning. Invariably, no

effective teaching can take place without instructional materials. They are indispensable to the teaching and learning of Basic Technology. The importance of instructional materials is to enable the future professional technologists and engineers to develop necessary science skills, process skills and practical skills.

Basic Technology Curriculum is designed for a minimum use of expensive equipment. Teaching and learning are therefore to be facilitated by the use of real experiences through industrial visits, use of information and communication technology (ICT), instructional materials and other audio-visual aids. The contents under each theme are made to reflect the basic nature of technology (i.e. knowledge, skills, creativity and attitude).

Abolade (2009) stated that the relevance of making learning and instructional materials to qualify as community resources is its closeness to both teachers and learners. The Federal Republic of Nigeria aims at introducing students to technology at the beginning of their secondary school education (FRN, 2004). In line with this, Basic Technology involves disciplines which can help students in their entrepreneurial choice later in life. Therefore, community resources are resources outside the classroom, which can be used to pass across instructional contents. Examples of community resources are religious institutions, such as churches, mosques, and shrines, commercial banks, historical places (e.g. museum, zoo) industrial sites, etc. These are places of interest where students can visit for further explanation on what they have learnt in textbooks.

In the Junior Secondary classes, the learning of various subjects, precisely the practical oriented subjects like Basic Technology may be motivated and made increasingly real for students by arranging study situations which involve the community. For example, Students of Basic Technology can be made to visit metal workshop, textile industries in the nearest industrial centre. Finally, Basic Technology lessons move from simple teacher-centered verbal instruction to student-centered activity.

METHODOLOGY

The quasi-experimental, non-equivalent, non-randomized, pre-test, post-test control group design was adopted for the study. In the design, pre-test served as a measure of students' background knowledge and initial nature of attitude. Two intact classes (control and experimental group) from two co-educational schools were used for this study.

TABLE 1; the design is represented schematically as follows:

Group	Pre-Test	Treatment	Post-Test
Experimental	O_1	X	O_2
Control	O_3		O_4

Where:

O_1 = Pre-test scores of the experimental group.

O_2 = Post-test scores of the experimental group.

O_3 = Pre-test scores of the control group.

O_4 = Post-test scores of the control group.

X = the treatment for the experimental group.

Table 1 reveals that the experimental group received the treatment using community resources while the control group was taught using expository. After the treatment, all the groups were post-tested using same test prepared for pre-test, but in a re-arranged form.

SAMPLE AND SAMPLING TECHNIQUES

The subjects comprised 70 JSS 2 students of intact classes from 2 secondary schools in Ilorin West Local Government Area of Kwara State. The two comparable schools were selected using purposive sampling technique. The two sampled Junior Secondary Schools; Government Junior High School & Government Day Secondary School was assigned into control and experimental groups.

RESEARCH INSTRUMENTS

Research instruments that were used to gather the relevant data for this study were divided into two.

- (1) **Instructional Strategy on Practical Skills (Treatment) ISPS:** The treatment was a visitation to Olaoluwa Engineering Construction Works (Metal workshop), Adeta, Ilorin, Kwara State, Nigeria. The visitation was adjudged to be valid by the experts in the Department of Science Education, University of Ilorin, Ilorin, Nigeria.
- (2) **Basic Technology Achievement Test (BTAT):** This was the test instrument designed by the researcher. The Basic Technology Performance Test (BTPT) contains a 25 items with multiple choice responses. It was used to measure the performance of students in both pre-test and post-test.

VALIDATION OF RESEARCH INSTRUMENTS

The instruments were subjected to face and content validity by the experts in Educational Technology to ascertain its validity. The reliability of the instruments was assessed using the test-re-test procedure; the test was

re-administered three weeks after the first administration to the same set of respondents outside the research sampled. After this, the two sets of score were correlated using Pearson Product Moment Correlation Formular and a reliability index of 0.76 was obtained.

PROCEDURE FOR DATA COLLECTION

The study covered a period of six weeks, using an intact class of Junior Secondary School two (J.S.S 2). The same procedure of teaching used for the experimental group was equally used for the control group to teach the topics. However, the control group was not exposed to the treatment (community resources). The two groups (experimental and control group) were taught the following topics; the processes in identification of metals, types of metals, various uses of metals, meaning and uses of metal work hand cutting tools, meaning and uses of metal work marking tools and the importance of metal finishing. The lesson for the two groups lasted for four weeks (i.e. from second week to fifth week) while the first and the last week (i.e. first and sixth week) were used for the administration of pre-test and post-test respectively.

DATA ANALYSIS TECHNIQUE

Data gathered on the effect of community resources on Junior Secondary School Students' Performance in Basic Technology was statistically analyzed using mean and standard deviation to answer the three research questions. In testing the hypothesis, Analysis of Co-variance (ANCOVA) was used to ascertain whether any significant difference existed at α : 0.05 significant levels.

RESULTS

The results are presented in relation to research questions and hypothesis.

Research Question 1: What is the performance of the students taught using expository method?

Table 2: Mean and Standard Deviation on Research Question One

	N	Mean	Std. Deviation
Control	35	39.4286	9.90034

As shown in table 2, the students taught using expository performed below average with the mean score of 39.43. This indicated that in teaching Basic Technology, the use of expository method should be alongside community resources.

Research Question 2: What is the performance of the students taught using community resources?

Table 3: Mean and Standard Deviation on Research Question Two

	N	Mean	Std. Deviation
Treatment	35	54.5143	14.97522

The result in table 3 shows that the students taught using community resources performed above average of mean score 54.4143. This indicated that the teaching and learning of Basic Technology using community resources had a positive influence on performance of students.

Research Question 3: What is the difference between students' performance taught using expository and when taught using community resources?

Table 4: Mean and Standard Deviation on Research Question Three.

	N	Mean	Std. Deviation
Control	35	39.4286	9.90034
Treatment	35	54.5143	14.97522

As shown in table 4, the teaching and learning of Basic Technology using community resources has a positive influence on performance of students. As the mean score (54.4143) of the students taught using community resource was higher than the mean score (39.4286) of the students taught using expository. It can be found that teaching and learning of Basic Technology using community resources would in no small measure enhance students' academic performance in Basic Technology.

Hypothesis: There is no significant difference in the performance of students taught using expository and the students taught using community resources.

The result from data collected related to this hypothesis is as shown in table 5.

Table 5: ANCOVA for post-test score of students taught using expository and community resources

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	2166.222 ^a	2	120.346	1.651	0.159
Intercept	254.215	1	254.215	3.487	0.080
PRE-TEST	540.651	1	540.651	7.417	0.015
TREATMENT	1169.220	35	68.778	0.943	0.548
Error	1166.349	32	72.897		
Total	57744.000	70			
Corrected Total	3332.571	69			

a. R Squared = 0.650 (Adjusted R Squared = 0.256).

From table 3, it is shown that at 0.05 significance level, the value produced $F(2, 69) = 0.943 > 0.548$. This implies that there was a significant difference between the two groups of students. The analysis revealed that those students taught using community resources performed better than those students taught using expository. Therefore, hypothesis one was rejected.

SUMMARY OF FINDINGS

The findings of this study were summarized thus:

Those students taught using expository performed below average with mean score 39.43 while the students taught using community resources performed high with mean score 54.4. This indicated that teaching and learning using community resources would in no small enhance students' academic performance in Basic Technology. In addition, there was significant difference in the performance of students taught using community resources and those taught using expository with the value $F(2, 69) = 0.943 > 0.548$.

DISCUSSION

The findings indicated that the students taught using community resources performed better than students taught using expository. Therefore, the mission of community resources is to enhance learning and academic success by providing activities and programmes for students using resource persons from the community to share their skills, knowledge, value and attitudes.

CONCLUSION

The use of community resources ensures teachers, parents and community members meet their responsibilities to ensure maximum use of resources. Since the classroom is a limited environment, the teaching and learning of Basic Technology must go beyond the four walls of the classroom.

RECOMMENDATIONS

- (1) Teachers should expose students to community resources which will promote and encourage social interaction, active engagement in learning, self motivation, discovery learning, learning by doing and learning by experience.
- (2) Basic Technology teachers should be trained on the effective use of community resources.
- (3) Community resources are strongly recommended for developing practical skills among Junior Secondary students.

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